

AD-A248 071



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Form Approved
OMB No 0704-0188

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1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE 03/23/92		3. REPORT TYPE AND DATES COVERED POP Test (08/91)	
4. TITLE AND SUBTITLE Performance Oriented Packaging Testing of Container, Shipping and Storage, CNU-287/E for Packing Group II Solid Hazardous Materials				5. FUNDING NUMBERS	
6. AUTHOR(S) Karen McDonnell				DTIC ELECTE S MAR 31 1992 D C	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Weapons Station Earle Test and Evaluation Branch (Code 5023) Colts Neck, NJ 07722-5000					
8. PERFORMING ORGANIZATION REPORT NUMBER DODPOPHM/USA/DOD/NADTR91024				9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) Commander, Naval Air Support Center (AIR-41822B) Department of the Navy Washington, DC 20361-8050	
10. SPONSORING/MONITORING AGENCY REPORT NUMBER Same as above				11. SUPPLEMENTARY NOTES N/A	
12a. DISTRIBUTION/AVAILABILITY STATEMENT			12b. DISTRIBUTION CODE		
13. ABSTRACT (Maximum 200 words) Qualification tests were performed to determine whether the in-service CNU-287/E Shipping and Storage Container could be utilized to contain properly dunnaged solid type hazardous materials weighing up to a gross weight of 589 kg (1,300 pounds). The tests were conducted in accordance with Performance Oriented Packaging (POP) requirements specified by the United Nations Recommendations on the Transportation of Dangerous Goods, ST/SG/AC.10/1 and the Code of Federal Regulations, Title 49 CFR, Parts 107 through 178. The container has not conformed to the POP performance requirements; i.e., the container did not successfully retain its contents throughout the specified tests.					
14. SUBJECT TERMS POP Test of CNU-287/E Shipping and Storage Container				15. NUMBER OF PAGES 6	
				16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT UNCLASSIFIED	18. SECURITY CLASSIFICA- TION OF THIS PAGE UL	19. SECURITY CLASSIFICA- TION OF ABSTRACT UL	20. LIMITATION OF ABSTRACT UL		

DODPOPHM/USA/DOD/NADTR91024

PERFORMANCE ORIENTED PACKAGING TESTING
OF
CONTAINER, SHIPPING AND STORAGE, CNU-287/E
FOR PACKING GROUP II SOLID HAZARDOUS MATERIALS

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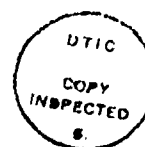
Performing Activity:
Naval Weapons Station Earle
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INTRODUCTION

This Performance Oriented Packaging (POP) test was performed to ascertain whether the CNU-287/E Shipping and Storage Container (Packing Group II) meets the requirements specified by the United Nations Recommendation on the Transportation of Dangerous Goods Document, ST/SG/AC.10/1, Revision 6, Chapters 4 and 9 and the Code of Federal Regulations, Title 49 CFR, Parts 107 through 178, dated 1 October 1991. The container's contents consisted of four steel pipe sections each weighing 93 kg (205 pounds). Gross weight of the container was 589 kg (1,300 pounds).

Due to unavailability only one container was used for testing. This is less than the number required by the regulations. Approval for this deviation has been granted by the Under Secretary of Defense, Memorandum for the Joint Logistics Commanders dated 22 February 1990.

TESTS PERFORMED

1. Base Level Vibration Test

This test was performed in accordance with Title 49 CFR, Part 178, Subpart M, Sec. 178.608. The container was placed on the repetitive shock platform. The container was restrained during vibration in all but the vertical direction. The frequency of the platform was increased until the container left the platform 1/16 of an inch at some instant during each cycle. Test time was 1 hour.

2. Stacking Test

This test was performed in accordance with Title 49 CFR, Part 178, Subpart M, Sec. 178.606. The container was subjected to a force applied to its top surface equivalent to the total weight of identical packages stacked to a minimum height of 3 meters (including the test container). A weight of 3,537 (7,800 pounds) was stacked on the test container. The test was performed for 24 hours. The weight was then removed and the container examined.

3. Drop Test

This test was performed in accordance with Title 49 CFR, Part 178, Subpart M, Sec. 178.603. Five drops were to be performed from a height of 1.2 meters (4 feet), impacting the following surfaces:

- a. Flat bottom
- b. Flat top
- c. Flat on long side
- d. Flat on short side
- e. One corner

PASS/FAIL

1. Base Level Vibration Test

The criteria for passing the base level vibration test is outlined in Title 49 CFR, Sec. 178.608(c): No test sample should show any deterioration which could adversely affect transportation safety or any distortion liable to reduce packaging strength.

2. Stacking Test

The criteria for passing the stacking test is outlined in Title 49 CFR, Sec. 178.606(d): No test sample may show any deterioration which could adversely affect transport safety or any distortion likely to reduce its strength, cause instability in stacks of packages, or cause damage to inner packagings likely to reduce safety in transportation.

3. Drop Test

The criteria for passing the drop test is outlined in Title 49 CFR, Sec. 178.603(f): A package is considered to successfully pass the drop tests if for each sample tested, no rupture occurs which would permit spillage of loose explosive substances or articles from the outer packaging.

TEST RESULTS

1. Base Level Vibration Test

Satisfactory.

2. Stacking Test

Satisfactory.

3. Drop Test

Unsatisfactory.

DISCUSSION

1. Base Level Vibration Test

Immediately after the vibration test was completed, each container was removed from the platform, turned on its side and inspected. No unfavorable distortion or deterioration was observed.

2. Stacking Test

Each container was inspected after the 24-hour period was over. No unfavorable distortion or deterioration was observed.

3. Drop Test

After each drop, the containers were inspected. During the flat drop on the long side, the lid of the container opened, allowing the dummy shapes to strike into each other. After the test, the shapes were lying on the ground. Further testing was aborted.

REFERENCE MATERIAL

A. United Nation's "Recommendation on the Transportation of Dangerous Goods," ST/SG/AC.10/1, Revision 6.

B. Code of Federal Regulations, Title 49 CFR, Parts 107-178.

C. Bureau of Explosives Tariff No. BOE 6000K Hazardous Materials Regulations of the Department of Transportation by Air, Rail, Highway, Water including Specifications for Shipping Containers.

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TEST DATA SHEET

DATA SHEET:	
Container: CNU-287/E Shipping and Storage Container	
Type: 6HA2	Container P/N or NSN: NSN 8E 8140-01-072-3593
Specification Number: PN639AS2750	Material: Plastic Receptacle
Gross Weight: 589 kg (1,300 pounds)	Dimensions: 136.0" x 35.38" W x 18.63" H
Closure (Method/Type): Removable Lid	Tare Weight: 218.2 kg (480 pounds)
Additional Description:	
PRODUCT:	
Name: See table	NSN(s): See table
United Nations Number: See table	
United Nations Packing Group: II	
Physical State (Solid, Liquid, or Gas): Solid	
Vapor Pressure (Liquids Only): N/A At 50 °C: N/A At 55 °C: N/A	
Consistency/Viscosity: N/A	Density/Specific Gravity: N/A
Amount Per Container: 4	Flash Point: N/A
Net Weight: See table	
TEST PRODUCT:	
Name: SIDEWINDER, AIM-9G/H/L/M	Physical State: Solid
Consistency: N/A	
Density/Specific Gravity: N/A	
Test Pressure (Liquids Only): N/A	
Amount Per Container: N/A	Net Weight: 372.7 kg (820 pounds)

TABLE 1
Products Approved for Shipping in the
CNU-287/E Shipping and Storage Container

NALC	NSN	Product Type	Packing Drawing	UN Code	UN Number	Units/ Cntr	Unit Weight (lb)
FW62	6920-01-061-8673	Guided Missile Training	PN 639AS2750	1.4C	0276	4	160
FW63	6920-01-061-8676	Guided Missile Training	PN 639AS2750	1.4C	0276	4	160
FW64	6920-01-061-8674	Guided Missile Training	PN 639AS2750	1.4C	0276	4	160
FW65	6920-01-061-8677	Guided Missile Training	PN 639AS2750	1.4C	0276	4	160
PC60	1410-01-201-8546	Guided Missile Prac, CATM-9M-1	PN 639AS2750	1.4C	0276	4	188.2
PC61	1410-01-200-8108	Guided Missile Prac, CATM-9M-2	PN 639AS2750	1.4C	0276	4	188.2
PC62	1410-01-201-4024	Guided Missile Prac, NATM-9L-2	PN 639AS2750	1.3C	0183	4	188.2
PC64	1410-01-201-4021	Guided Missile Prac, NATM-9M-1	PN 639AS2750	1.1E	0181	4	188.2
PC65	1410-01-201-4022	Guided Missile Prac, NATM-9M-2	PN 639AS2750	1.3C	0183	4	188.2
PB55	1410-01-139-1741	Guided Missile Prac, AIM-9M-1	PN 639AS2750	1.1E	0181	4	160
PC47	1410-01-268-6970	Guided Missile Prac, AIM-9M	PN 639AS2750	1.1E	0181	4	190
PA72	1410-01-056-9405	Guided Missile Prac, AIM-9L	PN 639AS2750	1.1E	0181	4	190